

#11 The Experimental Regional Ensemble Forecast System (ExREF)

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The Experimental Regional Ensemble Forecast (ExREF) system has been a component of the Hydrometeorology Testbed (HMT) numerical weather prediction suite in the past two winters. Its results are distributed to the Sacramento, CA National Weather Service (NWS) Weather Forecast Office and River Forecast Center, where they are ingested in the Advanced Weather Interactive Processing System (AWIPS) to provide guidance on the forecasting of extreme precipitation events. ExREF has also been used as experimental guidance for the NWS Weather Prediction Center Flash Flood and Intense Rainfall (FFaIR) and Winter Weather experiments. Finally, ExREF is being ingested and tested by a private company as guidance for winter precipitation events that can bring down power lines or disrupt reliability of power to customers.

ExREF is run in near-realtime by the Global Systems Division (GSD) of the NOAA Earth System Research Laboratory (ESRL). Currently the eight-member ExREF domain covers most of North America in order to make results applicable to a variety of weather regimes and NOAA programmatic needs. In spite of all its realtime applications, ExREF is not an operational system or a system planned for operational transition as is. Instead, ExREF is a tool for the development and testing of new Numerical Weather Prediction (NWP) methodologies. It employs 9-km grid spacing so tests are conducted with higher resolution than the current NCEP operational Short-Range Ensemble Forecast (SREF) system. At this time, there are ongoing experiments with ExREF in representation of model uncertainty (through diversity of microphysics parameterizations) and initial condition uncertainty (through dynamically-downscaled Global Ensemble Forecast System (GEFS) analyses).

In this presentation we will provide an ExREF overview, along with examples of its use in a testbed context and as a platform for testing new techniques that can lead to improvement of operational ensemble forecasting.